

United States Department of Agriculture
Agricultural Research Administration
Bureau of Entomology and Plant Quarantine

CONTROL OF HUMAN LICE

By Gaines W. Eddy and Raymond C. Bushland
Division of Insects Affecting Man and Animals

Three kinds of lice attack man--the body louse (Pediculus humanus corporis Deg.), the head louse (P. humanus humanus L.), and the crab or pubic louse (Phthirus pubis (L.)). These lice are world-wide in their distribution and all are found in the United States.

From a medical viewpoint the body louse is most important, because in many parts of the world it serves as a vector of diseases, the most serious being epidemic typhus. Louse-borne diseases are extremely rare in the United States and, as infestations of the body louse in this country are usually limited to vagrants, it causes less domestic concern than do head and crab lice. Head lice have been proved capable of transmitting typhus under experimental conditions, and therefore are important from a health standpoint. Crab lice are not known to transmit disease.

The head louse and the body louse are similar in appearance, the varieties being distinguished only by their location on the host. An adult body louse (fig. 1) is grayish in color and about one-fourth inch long; the immature stages, or nymphs, are smaller, but even newly hatched lice are visible to the naked eye. A crab louse (fig. 2) is shorter and much flatter and broader than a body louse. Its crablike shape accounts for its common name.

The eggs, or nits, of human lice are all similar in appearance. They are whitish in color, and are often more noticeable than the lice. The presence of eggs is frequently used as an index of infestation when examinations are made by doctors and nurses.

The life cycles of all three kinds of lice are similar. Ordinarily eggs hatch in about 8 days after they are laid, but eggs somewhat removed from the body develop more slowly at lower temperatures and incubation sometimes requires 2 weeks. Head and body lice spend about 9 days in the nymphal stages, molting (shedding their skins) three times as they grow to adults. Crablice develop more slowly than do the other species. The females begin laying eggs about 1 day after they have emerged as adults. A female louse may live as long as a month, laying 4 or 5 eggs each day.

579

Immature lice usually stay close to the skin, from which they suck blood, whereas sexually mature lice are more migratory. Fully fed, mated females frequently wander about on the clothing and do not seek the skin again until they become hungry. When people are closely associated in situations such as are common in schools, barracks, or public conveyances, this habit of the lice makes for a rapid spread of infestations.

Body Lice

The body louse lives in the clothing and visits the skin several times daily to feed. The undergarments are most heavily infested, but some lice can usually be found in the outer clothing. Ordinarily the eggs are deposited exclusively on the clothing, the seams and folds being preferred. The eggs are usually glued to fibers of the cloth, but sometimes they are fastened to hairs on the body.

Persistent infestations by the body louse are always associated with poor sanitation. Control of this insect among civilians is best accomplished by providing adequate laundry facilities and sufficient clothing for a weekly change. Either washing in hot water or dry cleaning infested garments kills all stages of lice. If all individuals change to clean clothing once a week, complete control is assured. Because the body louse lives in the clothing rather than on the body, this insect is easier to control than are the head louse and the crab louse.

If some member of an average American family should happen to become infested with body lice, no special procedure is necessary to protect the family if the infested person follows the directions given above. If, as rarely happens, a few lice or eggs on the individual's body should escape immediate destruction, they cannot survive to build up an infestation in a home where ordinary cleanliness is practiced.

Eradication of the body louse from any group of people is now practicable because of the development of insecticides possessing residual action. One of the most satisfactory materials is a louse powder consisting of 10 percent of DDT in pyrophyllite or talc, which was developed at the Orlando, Fla., laboratory of the Bureau of Entomology and Plant Quarantine. One ounce of the powder should be applied over the inner surface of underclothing, and an additional 1/2 to 1 ounce to the seams of the outer garments. Underwear thoroughly treated in this way continues to kill lice for about a month's wearing thereafter. When the DDT powder is properly applied to the clothing of all individuals in an infested community, a single application will eradicate the lice.

DDT louse powder can be effectively applied with any shaker type of container, but large groups of people can be more rapidly and efficiently treated by delousing crews using standard insecticide dusters. The Army found that either hand-operated or power dusters gave good results and that for such treatment it was not necessary for civilians to remove their clothing. The nozzle of the duster should be inserted through openings in the clothing and the powder applied to the skin and between layers of clothing. When mechanical equipment is used, at least 2 ounces of powder should be applied to each person being treated. If only a few individuals are to be treated, a satisfactory duster can be made from a small jar or can having a metal lid by punching a few holes in the cover.

Head Lice

The use of insecticides is essential for the control of head lice, because these insects can withstand frequent shampooing with soap and water, and it is almost impossible to remove all lice and eggs by combing and brushing the hair.

The 10-percent DDT powder is also effective against the head louse, but because the residue may be visible in the hair a liquid material known as the NBIN formula, which was also developed at the Orlando laboratory, is preferred. If the DDT powder is used, it should be applied either with a mechanical duster or with the shaker type of container, the method of application depending somewhat on the number of persons to be treated. The dust should always be thoroughly applied.

Since DDT does not affect the eggs, the powder should not be washed from the hair for at least 10 days after treatment. If left in the hair, the powder will kill young lice as they hatch from the eggs. If an individual user prefers to wash his hair on the day after treatment, a second application should be made 8 to 10 days after the first.

Although the NBIN formula was developed during the war for use against the body louse in conjunction with certain other control measures, it should find greater use in peacetime against the head and crab louse. The formula may be prepared in concentrated form and diluted with water as needed. The NBIN concentrate consists of the following ingredients:

Percent by weight

Benzyl benzoate	68
Sorbitan monooleate polyoxyalkylene ether derivative (<u>Tween 80</u>)	14
Benzocaine	12
DDT	6

To prepare an emulsion, 1 part of the concentrate should be diluted with 5 parts of water. This mixture should be shaken thoroughly before it is used. The method of applying the material is not so important as doing a thorough job. The eggs must be contacted to be killed. To make sure that this is done the hair should be wet, or at least moistened throughout. Combing the hair following application tends to insure a more even distribution of the treatment.

If properly applied, this material will kill all lice and eggs present in the hair, and the residual effect will last for 2 weeks or more. Even though all the lice and eggs in the hair are killed, there may be live lice or viable eggs present in the clothing, headwear, or about the home which may cause a reinfestation if the hair is washed too soon after treatment. To make fairly certain that lice are completely eradicated, the material should be allowed to remain in the hair for at least 8 to 10 days. The treatment can be used effectively as a prophylactic if an application is made every 2 or 3 weeks.

Other remedies, such as larkspur lotion and kerosene in either vinegar or olive oil, and derris powders and lotions, have been widely used against head lice. These materials are not ovicidal and do not have long-lasting properties; therefore, two or more treatments are required. They are not recommended unless the DDT or the NBIN formula is not available.

Crab Lice

Sanitation is much less important in the prevention and control of the crab louse than it is for the body louse. The crab louse lives in the hairs of the body rather than in the clothing, and therefore removing and disinfecting the garments will not free the person of lice; it is necessary to use insecticides.

Crab lice can be conveniently and effectively controlled with two treatments of the 10-percent DDT powder. The second application should be made about 8 to 10 days after the first. All hairy portions of the body, including the arms, armpits, chest, the pubic and perineal region, and the legs, should be thoroughly dusted and the material rubbed in with the fingers. The user should not bathe for at least 24 hours after applying the treatment.

The NBIN formula is also effective against the crab louse. A single application has been found to eradicate an infestation. This material should also be applied thoroughly to all hairy parts of the body and rubbed in well. Application may be made with any absorbent material

or by hand. If large numbers of individuals are to be treated, a sprayer with a paint-spray nozzle may be found convenient. The treatment should be allowed to remain on the body at least 24 hours to prevent a possible reinfestation from lice in the bedding or other places.

Several other remedies have been used against crab lice in the past, including blue ointment, kerosene in vinegar or olive oil, and derris and larkspur lotions. These materials are inferior to the DDT powder or the NBIN formula and are no longer recommended. Derris powder or preparations containing kerosene are irritating to the tender parts of the body and should not be used in crab louse control.

UNIVERSITY OF FLORIDA



3 1262 09238 7280